

WHAT IS CLAIMED IS:

1. An optical coupling device comprising:
at least two optical elements; and
an anisotropic light-guiding member formed by a periodic two- or three-dimensional arrangement of two or more kinds of dielectric materials of different dielectric constants to develop a photonic band gap to inhibit the propagation of light in directions except a particular one, said anisotropic light guiding member being disposed between said at least two optical elements.
2. The device of claim 1, wherein at least one of said two optical elements is a single-mode optical fiber.
3. The device of claim 1, wherein at least one of said two optical elements is a laser diode.
4. The device of claim 1, wherein at least one of said two optical elements is a light receiving element.
5. The device of claim 1, wherein the sizes of said dielectric materials of said anisotropic light guiding member and the pitch of the periodic arrangement of said dielectric materials are submicron.
6. The device of claim 2, wherein the sizes of said dielectric materials of said anisotropic light guiding member and the pitch of the periodic arrangement of said dielectric materials are submicron.
7. The device of claim 3, wherein the sizes of said dielectric materials of said anisotropic light guiding member and the pitch of the periodic arrangement of said dielectric materials are submicron.
8. The device of claim 4, wherein the sizes of said dielectric materials of said anisotropic light guiding member and the pitch of the periodic arrangement of said dielectric materials are submicron.
9. The device of claim 1, wherein said anisotropic light guiding

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member is formed by periodically arranging a particular kind of dielectric material molded in spherical, columnar, prismatic or thin film form and filling their gaps with a different kind of dielectric material.

10. The device of claim 2, wherein said anisotropic light guiding member is formed by periodically arranging a particular kind of dielectric material molded in spherical, columnar, prismatic or thin film form and filling their gaps with a different kind of dielectric material.

11. The device of claim 3, wherein said anisotropic light guiding member is formed by periodically arranging a particular kind of dielectric material molded in spherical, columnar, prismatic or thin film form and filling their gaps with a different kind of dielectric material.

12. The device of claim 4, wherein said anisotropic light guiding member is formed by periodically arranging a particular kind of dielectric material molded in spherical, columnar, prismatic or thin film form and filling their gaps with a different kind of dielectric material.